

Cost: BQ vs. Hotel**Background**

- As request by Captain Liedke, EICO has done a comparison between a commercial hotel and a Bachelor Quarters (BQ). We looked at several hotel chains to find one that had a similar layout and comparable amenities to that of a BQ.

Discussion

- We received information from a hotel chain that provided us breakdown of some of the costs for their commercial construction projects.
- The selected hotel's overall building configuration is reminiscent of early Army UEPH designs that provided full amenities, i.e. Administrative, Lobby, Meeting rooms Pantry, Public Toilets, Exercise Rooms, etc. The example we selected shows a "Lodge" building containing these features, separate from the hotel building.
- Bachelor Quarters are inherently different from commercial hotels. Here are a few factors:
 - Commercial hotels utilizes less expensive exterior finishes including roofs
 - Force Protection Criteria including progressive collapse is not a requirement of commercial hotels.
 - BQ design incorporates sustainable features.
 - The subject hotel has a 2-burner cook top, midsize refrigerator, smaller bar sink, 2-seat eat-in table, and a dishwasher. BQ is similar, but adds a stackable washer/dryer.
 - Because of higher demand (higher occupancy rate), and washer and dryer in every room, the mechanical and electrical system requirements are greater in a BQ.
 - Commercial hotels only provide 1 closet; BQ requires four lockable closets per module.
 - Interior finishes are judged to be similar to Navy BQ criteria, carpeting (bedroom/living) and vinyl flooring (kitchen/bath). However, hotels cater to a professional clientele. A BQ is designed for the 18-23 year-old sailor.
 - Elevators are passenger sized at commercial hotels. Navy criteria requires larger freight elevators for furniture movement and durability.

Conclusion

- Commercial hotels do not build to the same criteria and function as a BQ.
- The cost of building a hotel is comparable to a BQ.
 - The cost for a standard BQ is \$177/SF
 - The construction cost of a hotel building is \$176/SF. The hotel's base price appeared to be lower. However, when factors such as Force Protection, sustainability, size factor, labor rates, site access, and area cost factor, the cost is essentially the same.

ATTACHMENT A: Bachelor Quarters compared to a Commercial Hotel

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ATTACHMENT A: Bachelor Quarters compared to a Commercial Hotel

Subject: Bachelor Quarters Compared to a Commercial Hotel

We looked at several hotel chains to find one that was similar in configuration and amenities as a Bachelor Quarters. We received that provided a breakdown of some of the costs for their commercial construction projects. This may illuminate some of the cost deltas between commercial construction projects and government projects.

Differences in Gross Building Configuration

The selected hotel's overall building configuration is much more reminiscent of early Army UEPH designs that provided full amenities, i.e. Administrative, Lobby, Meeting rooms Pantry, Public Toilets, Exercise Rooms, etc. in a separate building. The selected hotel shows a "Lodge" building containing these features, separate from the hotel building. Completed, their projects range from 75,000-90,000 gross square feet in size.

Exteriors Finishes

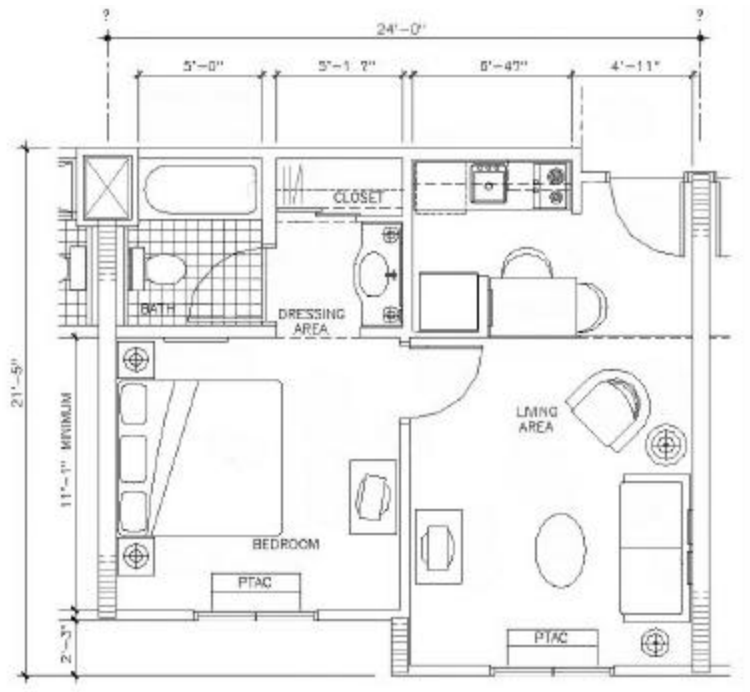
- Less Expensive Exterior Finishes – The selected hotel provides brick/ EIFS exteriors similar to Navy criteria, but often uses much cheaper exterior vinyl siding as well.
- Less Expensive Roofs – The selected hotel uses bottom-line shingled roofs vs. Navy criteria, which is 30-year shingle or standing seam metal.
- Pitched roofs are standard for both.

Room Similarities

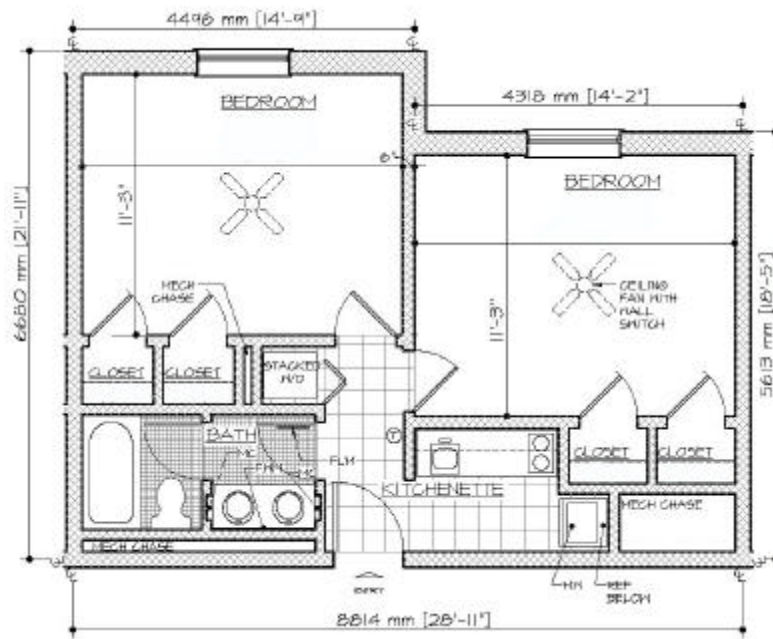
While recognizing the difficulty of comparing "Apples to Oranges", the selected hotel's "Guest Suites" bear some plan similarities to our 1+1E BQ, see the King Suite and Navy 1+1E layouts on the following page.

The selected hotel offer 5 plans from 1-bedroom studios (437sf) to 2-Bedroom 2-Bath Suites (959sf). They also provide 4 handicap accessible plans ranging from 1 Bedroom Studio (581sf) to a 2 Bedroom 2-Bath Suite (959sf). Other similarities include:

- Small kitchens – provided with 2-burner cook top, midsize refrigerator, smaller bar sink, 2 seat eat-in table. The selected hotel also adds dishwashers.
- Full Bathroom – provided with single lavatory, full tub-shower, and tank type water closet.
- The selected hotel provides only 1 closet, BQ has 4 lockable closets per module.
- Interior finishes are judged to be similar to Navy criteria; carpeting (bedroom/living) and vinyl flooring (kitchen/bath). However, the selected hotel caters to a professional clientele. BQs are built for 18-23 year-old sailors, which requires greater material durability.
- Elevators are passenger sized at the selected hotel. Navy criteria requires a larger freight elevators sized for furniture movement and durability.



King Suite



Navy 1+1E

Structural

Structurally, the selected hotel uses Stick-built construction where feasible, as well as Block & Plank construction. Navy criteria commonly builds to Block construction. Army is currently requesting a directive to allow them to use Stick-built construction. Note: "Stick-built" may be either wood or metal frame construction.

Mechanical

The selected hotel provides individual Heating/Cooling per apartment by Packaged Thermal Air-conditioning Units (PTAC). These are packaged thru-wall units with outside air capability.

BQ's typically utilize 4-pipe fan coil systems, which require chillers, boilers, and associated pumping systems. Fan coil systems also require an additional central ventilation system to introduce outside air.

The newest trend is variable air volume (VAV) systems. This system consists of central air handlers with terminal units in each conditioned space. Both the fan coil and the VAV systems utilize a centralized DDC control system. The VAV system has a higher installation cost but is more energy efficient than the fan coil system or the thru-wall ventilators.

Also, with the requirement of a washer and dryer in each room (1+1E), HVAC system capacity has to be increased due to the additional heat loads and ventilation requirements introduced by the dryers.

Electrical

Typically, commercial hotels are designed with a permanent furniture layout in mind. In the selected hotel's configuration, there are only 2 CATV outlets, 2 telephone outlets, and no LAN outlets. Internet connectivity would be provided via a port on the desk phone. All the electrical wiring is standard residential (Romex) with no conduit.

Bachelor's Quarters are designed so that the furniture can be rearranged. With that in mind, BQs require additional telecommunications and electrical over the selected hotel's standard configuration. In the typical BQ 1+1E configuration there are 4 CATV outlets, 4 telephone outlets and 4 LAN outlets. Previous criteria required six of each. Additional electrical requirements include electrical connections for ceiling fans, washer, and dryer. All electrical wiring is commercial grade and provided in conduit for future upgrades and renovations. BQs are also designed around greater occupancy than the typical hotel; therefore electrical system demand is higher per square foot.

Major Differences Between Commercial Construction and Navy Criteria

- Davis-Bacon building wage rates vs. residential wage rates greatly increases labor costs for Government construction; Commercial construction has a substantial pricing advantage.
- On-Base construction imposes a substantial premium; Location has a substantial impact on construction costs.
- Force Protection Criteria requirements for military projects;
- Design for Progressive Collapse increases structural costs;
- Sustainable Design increases upfront construction to reduce later maintenance costs;
- Construction to Government Standards vs. Commercial Standards (Stick-built/ Masonry);
- Mechanical systems
- Electrical requirements
- Our 1+1E Apartments provide in-room Washers and Dryers. The selected hotel does not provide laundry facilities.

BQ Budgeting

We are currently budgeting for our BQ as follows:

The current FY06 Guidance Cost from the DoD Facilities Pricing Guide-Part 2 is \$1615/m² (\$150/SF). FY05 was \$1612 (\$150/SF). Guidance Cost does not include community centers or administration facilities, they must be programmed separately because of the gross SF programming limitations. Be aware this is the minimum cost, for budgeting a BQ we typically add the following:

- Sustainable Design – adds 5% of the primary facility cost.
- Progressive Collapse – adds 5% of the primary facility cost for three stories or higher for progressive collapse (1/2% for buildings < three stories)
- OMSI – adds 1.5-2%
- Information Systems - \$30/m² for information systems (voice/data/CATV)
- Roofs - \$30/m² of roof area for Standing Seam Metal Roof
- (Freight) Elevators - add \$50k/floor
- Fire Pumps - \$25k/BQ

- Compact Kitchens add \$750/module
- For 1+1E an additional \$1000/module is required for laundry equipment support.

If we relate this to the current DoD average BQ size of 44,000 SF

Primary Facility	\$150/SF	
ATFP	\$7.5/SF	5% progressive collapse
Sustainability	\$7.5/SF	5% sustainable design
OMSI	\$2.25/SF	
Information System	\$2.79/SF	CATV/Voice/Data
Roof	\$0.93/SF	Assume 3 story
Elevator	\$3.41/SF	
Fire Pump	\$0.57/SF	
Compact Kitchen	\$1.06/SF	
Laundry	\$1.41/SF	Electrical, plumbing, and dryer venting
TOTAL	\$177.00/SF	

Hotel Costs

The developer's package we received contained three examples. Here are the cost associated with each project:

LOCATION	SF	Cost	Cost/SF	ACF	Normalized \$/SF
Chester VA:	92,102	\$12,085,000	\$131/SF	.92	\$142/SF
Oakland, CA	84,000	\$14,722,719	\$175/SF	1.2	\$146/SF
Charlotte, NC	76,826	\$8,917,611	\$116/SF	.87	\$133/SF

The hotel could not give us a breakdown of site work vs. primary facility. Typically, for BQ projects site work ranges from 15-30% depending on location and utilities available. Using the average of the normalized hotel examples, it would appear that the average primary facility cost would be around \$109/SF (\$140.33 –22.5%). Escalated to FY05 pricing and adjusting for size of building, the cost would be \$132/SF.

Again, if we relate this to the current DoD average size of 44,000 SF

Primary Facility	\$133/SF	
ATFP	\$6.65/SF	
Sustainability	\$6.65/SF	
OMSI	\$2.00/SF	
Info Sys	\$1.40/SF	Additional Voice/Data/LAN requirements
Roof	\$0.93/SF	Assume 3 story
Elevator	\$0.70/SF	Cost difference between freight and passenger \$30k
Fire Pump	\$0	Assumed in Hotel cost
Compact Kitchen	\$0	Assumed in Hotel cost
Laundry	\$1.41/SF	Electrical, plumbing, and dryer venting
Mechanical	\$7.06/SF	Additional cost for VAV, Ceiling fans, load and central control system
Electrical	\$6.46/SF	Additional cost for conduit, connections & demand
TOTAL	\$166.00/SF	

This appears to be comparable to the cost of a BQ. Especially when you factor in Davis Bacon wage rates and the additional security requirements of working on a Navy base. Labor rates are typically 40% of the construction cost. If you just add a 15% premium to the labor rates the cost becomes \$176/SF. Of course other factors must be considered when you look at the overall budget of a BQ. SIOH (6%), PCAS, contingency (5%), and acquisition strategy must all be considered when budgeting a Navy construction project.

Standardization of Design:

About every 18-24 months, the question of standardization of designs surfaces. "Why can't we build one-size-fits-all and just build them everywhere like commercial business does?" The answer is simple. "Commercial business does not." Commercial projects from housing to anchor stores must tailor their designs to accommodate their local customer base and individual site constraints. Retail stores change the size of their

internal departments within the stores depending on the total size and customer preferences of the area. Also, differences in environment drive differences in design. Different soils require different foundations; climate drives HVAC systems design; and one-size does not fit all. The exterior environment drives those design elements, not the function of the facility. Also, the local external support infrastructure will not only drive the design differences in utilities, parking, entrances, and exits; it will also influence the design layouts and orientation of the entire building. In short, the opportunities for standardization are only found in the very basic elements of the building, and not the entire structure.

Criteria Benefits

We have created “design criteria” to standardize those basic elements of a building, and to provide a seamless level of quality among projects. It is also an opportunity to raise our product expectations beyond commercial levels, and insist that our structures are safer, (Force and Fire Protection, design against Progressive Collapse), more comfortable, (cable TV/Computer hookups, ceiling fans), more accessible, (on-base), and more durable, (better carpet, better finishes). Commercial standards are fiscally limited to provide only minimum support of public health, safety, and welfare. Continuing development of a sound criteria package provides for all the standard things we need (apartment plan, room features, amenities) and identifies items that require higher standards than simple commercial quality. The comparison above shows that our actual construction costs are not too far from the private sector, and that our procurement methods and processes, as well as higher level of mandated requirements are also a large factor.